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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,691	09/27/2001	Ibrahim Mostafa Kamel	9432-000136	4401
27572	7590	02/10/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			SALL, EL HADJI MALICK	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	
			2157	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/965,691	KAMEL ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	El Hadji M Sall	2157	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. **DETAILED ACTION**

This action is responsive to the application filed on September 27, 2001. Claims 1-10 are pending. Claims 1-10 represent dynamic multicast grouping for vehicles and other mobile objects.

2. ***Claim Objections***

Claim 10 is objected to because of the following informalities: Claim 10 depends on claim 9, which depends on claim 8, which is a system. Claim 10 should read "the system" instead of "an information system". Appropriate correction is required.

3. ***Claim Rejections - 35 USC § 112***

Claims 1 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the set of mobile" and "the costs" in lines 5 and 7. There is insufficient antecedent basis for these limitations in the claim.

Claim 3 recites the limitation "said quad-tree" in 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "said quad-tree" in 11. There is insufficient antecedent basis for this limitation in the claim.

**6. Claim Rejections - 35 USC § 102**

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1, 3, 7 and 8 are rejected under 35 U.S.C. 102(e) as being unpatentable over Jamalabad et al. (referred to hereafter as Jam) U.S. 6,574,633.

Jam teaches the invention as claimed including method for dynamically grouping limited range physical entities in a topological space.

As to claim 1, Jam teaches a method for grouping mobile entities, comprising:

defining a partitioning entity (column 2, lines 52-56, Jam discloses this invention utilizes standard physical space partitioning techniques along with entity characteristics to distribute them into limited size overlapping sets...);

constructing an initial data structure that defines a plurality of cells occupied by said mobile entities (column 3, lines 26-33, Jam discloses partitioning the topological space into functional grids...);

for each cell, electing a coordinator from the set of said mobile entities occupying that cell (column 4, lines 16-32, Jam discloses... a device to dynamically group limited range entities in a topological space, comprising a data processor; the processor including a domain determiner to ascertain functional domains for each entity in the topological space...; column 1, lines 24-26, Jam discloses it becomes necessary to select an entity or various entities from a pool of entities to perform certain tasks within a topological area).

said coordinators cooperatively computing costs associated with selectively subdividing and merging said cells and communicating said costs to said partitioning entity (column 3, lines 61-63, Jam discloses the assigning step further comprises the step of calculating a membership value for each entity in each group; column 5, lines 13-16, Jam discloses Initial estimates of the functional domain spacing. 4) A scaling factor for each functional domain that the entities are viable. This is used to determine the grid spacing; it is inherent that servers are present to assign, calculate the membership value, and coordinate the calculating membership value).

partitioning entity using said costs to generate a new partition scheme and communicating said new partition scheme to said mobile entities (column 5, lines 1-31, Jam discloses...with this input, the subject space can now be portioned as indicated in the grid creation step 103...the subject space is partitioned according to the initial estimates...).

As to claim 3, Jam teaches the method of claim 1 wherein said step of cooperatively computing comprises:

each coordinator computing a first cost associated with subdividing that coordinator's cell (column 1, lines 24-32, Jam discloses... it is necessary to determine which node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place...; column 3, lines 61-63, Jam discloses the assigning

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step further comprises the step of calculating a membership value for each entity in each group; column 5, lines 13-16, Jam discloses Initial estimates of the functional domain spacing. 4) A scaling factor for each functional domain that the entities are viable. This is used to determine the grid spacing); and

using quad-tree data structure to identify sibling relationships among said coordinators to define sibling coordinators (column 5, lines 56-65, Jam discloses... his invention includes partitioning procedures such as binary space partitioning trees or quad- and oct-trees...); and

said sibling coordinators collectively computing a second cost associated with merging cells occupied by said sibling coordinators (column 5, lines 1-31, Jam discloses...with this input, the subject space can now be portioned as indicated in the grid creation step 103...the subject space is portioned according to the initial estimates...).

As to claim 7, Jam teaches the method of claim 1 further wherein said partitioning entity generates said new partition scheme by dividing the one of said cells that gives the largest cost decrease (column 6, lines 38-48, Jam discloses... his value is a ratio of the volume of intersection of the footprint and grid space divided by the grid space volume...).

As to claim 8, Jam teaches a system for grouping mobile entities comprising:  
a partitioning server (column 2, lines 52-56, Jam discloses this invention utilizes standard physical space partitioning techniques along with entity characteristics to distribute them into limited size overlapping sets...);

said partitioning server defining a data structure having nodes corresponding to cells occupied by said mobile entities (column 3, lines 26-33, Jam discloses partitioning the topological space into functional grids...);

a plurality of client applications each associated with one of said mobile entities (column 2, lines 2-12, Jam discloses...Specific applications can concentrate on only

one method of performing a task or what can be referred to as the morphology of the entity...);

said client applications each having communication mechanism capable of communicating with the communication mechanism of other client applications and with said partitioning server (column 1, lines 24-32, Jam discloses in various applications, it becomes necessary to select an entity or various entities from a pool of entities to perform certain tasks within a topological area. For example, in cellular phone communications, it is necessary to determine which node is the appropriate node to carry a particular signal when the cellular phone user travels from place to place...); and

said client applications and said partitioning server being configured to establish a dynamic partition protocol whereby quad-tree data structure is reconfigured based on the number of communicating entities within each of said cells (column 5, lines 56-65, Jam discloses...This invention includes partitioning procedures such as binary space partitioning trees or quad- and oct-trees...; abstract, Jam discloses limited range physical entities located in a topological space are dynamically grouped by partitioning the space into grids for different functional domains...).

#### **4. *Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 4-6 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamalabad et al. (referred to hereafter as Jam) U.S. 6,574,633.

Jam teaches the invention substantially as claimed including method for dynamically grouping limited range physical entities in a topological space.

As to claim 2, Jam teaches the method of claim 1 further comprising:

Associating a group with each of said cells and using said group to support communication among mobile entities within each cell (column 3, lines 22-40, Jam discloses... associating a group with each grid that corresponds to a unique functional domain and unique topological space...).

Jam did not teach explicitly a multicast group.

However, Weisshaar teaches service framework supporting remote service discovery and connection. Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide associating a multicast group with each of said cells and using said multicast group to support communication among mobile entities within each cell. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 4, Jam teaches the method of claim 1 comprising:

associating a vision domain with each of said entities (column 3, lines 25-26, Jam discloses determining functional domains for each entity in the topological space);

associating a group with each of said cells (column 5, lines 66-67, Jam discloses the next step 105 is group creation in which a group is associated with each grid space); and



enabling said entities to selectively join at least one of said multicast groups based on said vision domain (column 3, lines 36-37, Jam discloses assigning each entity to be a member of each group).

Jam did not explicitly teach multicast group.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Diwan to provide associating a multicast group with each of said cells; and

enabling said entities to selectively join at least one of said multicast groups based on said vision domain. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 5, Jam teaches the method of claim 1 further comprising associating a group with each of said cells, allowing said entities to join at least one of said groups and computing said costs by assessing the number of said groups entities have joined (column 5, lines 66-67, Jam discloses the next step 105 is group creation in which a group is associated with each grid space; column 3, lines 36-37, Jam discloses assigning each entity to be a member of each group; column 3, lines 36-40, Jam discloses assigning each entity to be a member of each group whose compared range of effectiveness intersects the compared grid space that is associated with the group; and storing the group memberships of each entity).

Jam did not teach explicitly multicasting.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Diwan to provide associating a multicast group with each of said cells, allowing said entities to join at least one of said multicast groups and computing said costs by assessing the number of multicast groups said entities have joined. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 6, Jam teaches the method of claim 1 further comprising associating a group with each of said cells and using said groups to communicate said new partition scheme to said mobile entities (column 3, lines 22-40, Jam discloses... associating a group with each grid that corresponds to a unique functional domain and unique topological space; ascertaining a range of effectiveness for each entity wherein the ascertaining step is performed for each functional domain to which an entity belongs...).

Jam did not teach explicitly multicast.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Weisshaar to provide associating a multicast group with each of said cells and using said multicast groups to communicate said new partition scheme to said mobile entities. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 9, Jam teaches the system of claim 8 wherein said client applications each have memory for storing a vision domain corresponding to a predefined area of interest and said communication mechanism of each of said client applications is configured to join in multicast group communication mobile entities in cells that overlap with said vision domain (column 3, lines 22-40, Jam discloses...assigning each entity to be a member of each group whose compared range of effectiveness intersects the compared grid space that is associated with the group; and storing the group memberships of each entity...; column 3, lines 25-26, Jam discloses determining functional domains for each entity in the topological space).

Jam did not teach explicitly multicast group.

However, Weisshaar teaches multicasting (column 17, line 51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam in view of Diwan to provide client applications each have memory for storing a vision domain corresponding to a predefined area of interest and said communication mechanism of each of said client applications is configured to join

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in multicast group communication mobile entities in cells that overlap with said vision domain. One would be motivated to do so to allow reduction of resources needed to service a network.

As to claim 10, Jam teaches a system according to claim 8 wherein said mobile entities having position location equipment that generates position data and wherein said client applications communicate to other client applications associated with mobile entities occupying a common cell (column 9, lines 14-22, Jam discloses... positional and coverage oriented relationship between the entities...).

Jam did not teach explicitly entities are vehicles.

However, Weisshaar teaches a vehicle position (column 4, line 65 – column 5, line 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jam to provide are vehicles having position location equipment that generates vehicle position data and wherein said client applications communicate said vehicle position data to other client applications associated with mobile entities occupying a common cell. One would be motivated to do so to allow mapping direction.

## **8. Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to El Hadji M Sall whose telephone number is 571-272-4010. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-4010.

Information regarding the status of an application may be obtained from the

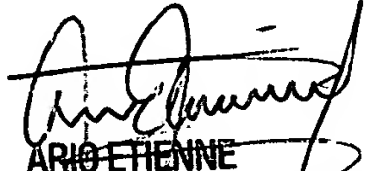
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El Hadji Sall  
Patent Examiner  
Art Unit: 2157



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